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Governor Appoints Montana Science and Technology Advisory Council

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Governor Stan Stephens signing the executive order creating the Montana Science and Technology Advisory Council. Also present, left to right, are Acting Deputy Commissioner for Academic Affairs David Toppen, MSTA Board Member Jon Marchi, MSTA Board and Council Member John Brower, MSTA Board Member Annie Bartos and MSTA Executive Director Carl E. Russell

As part of the process to move Montana and its science and technology development forward into the 1990s and the twenty-first century, the Governor issued the executive order creating the Montana Science and Technology Advisory Council on October 22. The council is established under the provisions of the Montana Science and Technology Financing Act enacted in 1989.

The purpose of the council is two-fold. First, to develop and recommend a state science and technology plan to MSTA by May 1, 1991. After approval

by MSTA, the plan will be presented to the Governor. And, second, to make recommendations to MSTA on specific applications for research and development projects. The plan will identify basic research capabilities in the state, assist in the development of a research agenda, strengthen Montana's efforts in

applied science and technology and further serve to develop the partnership among the private sector, university community and government.

The council will hold its initial meeting in early November. Subsequent meetings will be held in the coming months at various locations around the state. Specifically, the plan developed by the council will include a science and technology development policy; an identification of the

CONTINUED ...

Montana Entrepreneurship Center Opens for Business

On October 23, 1990, the Montana Entrepreneurship Center officially opened its doors to serve Montana's entrepreneurial community and hosted an open house at its central office in Missoula. The regional offices in Bozeman and Billings opened October 30. The Center is a collaborative effort of University of Montana's School of Business Administration, Montana State University's College of Business, Eastern

Montana College's School of Business and Economics and MSTA. The Center's goal is to link business owners and entrepreneurs with the information, resources and expertise needed to make their ventures successful.



As part of its continuing support for the centers of excellence program, MSTA committed \$150,000, matched on a dollar-for-dollar basis, to the Center during the current biennium to initiate operations. Additional funds provided this biennium are from U S WEST Foundation and Atlantic Richfield Corporation. MSTA provided initial funding in 1988 to evaluate the needs of Montana's entrepreneurial community

and formulate a development and operations plan for the Center.

Attending the open house were representatives from the business and entrepreneurial community, the Montana University System, state and local entrepreneurial and technology development leaders, and the Center's governing board as well as representatives from the Center's financial sponsors, the MSTA board of directors, U S WEST Communications and Atlantic Richfield Corporation.

"We are excited about the active role the Center will play in helping Montana's entrepreneurs acquire vital business development information," stated Chase Hibbard, MSTA board chairman. "As part of MSTA's centers of excellence program, the Entrepreneurship Center will further link the university system and private companies." □

GOVERNOR APPOINTS ...CONTINUED

strengths and weaknesses in the basic science resources and research capabilities in the state; a research agenda designating areas for potential scientific and technological development; a plan to encourage basic science research and strengthen Montana's efforts in applied science; recommendations on how to strengthen the partnership between the private sector, university community and government for science and technological development and financing; recommendations on how to improve and sustain the infrastructure for research and research training; and recommendations on how to achieve research excellence.

MONTANA SCIENCE AND TECHNOLOGY ALLIANCE



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The Science and Technology Advisory Council's plan will guide Montana's efforts in technology development into the 1990s and beyond

Appointed to serve on the science and technology advisory council are:

Robert E. Ivy, Chairman of the Council
President and CEO
Ribi ImmunoChem Research, Inc.
Hamilton, Montana

Richard K. Quisenberry
Vice President and Research Director
The DuPont Company
Wilmington, Delaware

Dr. William R. Wiley
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Carl E. Russell
Executive Director
Montana Science and Technology Alliance

David Toppen, Ph.D.
Acting Deputy Commissioner of Higher
Education
Montana University System

To implement the recommendations of the plan, MSTA will seek legislative support through the office of the Governor for expanded research and development financing for the 1993 biennium. Recommendations of the plan could include providing matching funds for federal dollars provided to the National Science Foundation-designated Center for Interfacial Microbial Process Engineering at Montana State University and to the National Science Foundation's EPSCOR research grant program in Montana. In addition, the plan could recommend financing for other research and development initiatives including continued funding support for the MSTA centers of excellence program.

During recent years, MSTA research and development program focused on providing support for its research centers of excellence in cooperation with the units of the university system and private sector companies. The five center recipients of MSTA support include the Center of Excellence in Biotechnology involving the University of Montana and Montana State University; Advanced Minerals and Hazardous Waste Processing Center of Excellence involving Montana College of Mineral Science and Technology, Montana State University and the University of Montana; Center of Excellence in Advanced Materials and Process Sciences involving Montana State University and Montana College of Mineral Science and Technology; the Center for Interfacial Microbial Process Engineering involving Montana State University, the Idaho National Engineering Laboratory and the center's numerous industrial sponsors; and the Montana Entrepreneurship Center involving the University of Montana, Montana State University and Eastern Montana College.

"We look forward to the implementation of the advisory council's comprehensive science and technology plan that will guide Montana's efforts in technology development into the 1990s and beyond" stated Carl Russell, MSTA executive director. □

Summary of MSTA Seed Capital Funding Requests

(May 1989 through September 1990)

Inquiries	154
Investment Proposals	77
Investments Closed	4

MSTA Investments from Seed Capital Fund

MSTA Funds Invested	\$1,205,750
Matching Funds	\$2,825,000
Total Funds Invested	\$4,030,750

The Montana Entrepreneurship Center:

The University System Assisting the State's Business Community

Higher education can play a significant role in economic development. The newly established Montana Entrepreneurship Center will use the strengths of Montana's university system to address business development and economic diversification by creating the infrastructure necessary to encourage and support entrepreneurship and small business development.

The Center is the cooperative effort of the University of Montana, Montana State University and Eastern Montana College and is funded by the Montana Science and Technology Alliance, U S WEST Foundation and Atlantic Richfield Corporation.

All six units of the Montana University System are represented in the Center with a central office at the University of Montana and regional offices at Montana State University and Eastern Montana College. All offices opened to the public in October.

"The establishment of the Montana Entrepreneurship Center marks a milestone in providing coordinated, state-wide university-based business development services to Montana's entrepreneurial community," stated Larry Gianchetta, dean of the School of Business Administration of the University of Montana.

Small Business and Entrepreneurial Ventures: The Keys to the Future

David Birch, one of the nation's leading researchers in the area of small business issues, emphasizes the critical importance of entrepreneurship in revitalizing the economy of the western states. According to Birch, states like Montana are economically weak and vulnerable, but have the potential for

long-term rejuvenation and growth if the state can improve the entrepreneurial and small business climate.

Montana provides the ideal setting for small business development. The state has the nation's highest concentration of small business establishments (95.8 percent) and the nation's highest percentage of small business employment (68.4 percent). In addition, Montana is blessed with a highly-qualified work force and a quality of life that attracts talented people to the state. Montana can use this propensity towards small business to facilitate the economic growth and industry diversification critical to the future. The challenge lies in creating the nurturing environment and infrastructure necessary to encourage and support entrepreneurship and small business development.

Using Montana's Universities to Address Economic Development

Recognizing the dynamic and powerful role that Montana's universities can play in the state's economic development, MSTA awarded the University of Montana, Montana State University and Eastern Montana College a planning grant in 1988 to research the need for a business assistance and entrepreneurial center. In 1989, MSTA provided funding to establish the Montana Entrepreneurship Center.

Montana's universities have unique and invaluable resources. Faculty expertise ranges from management, finance, accounting, marketing and economics to mechanical, electrical, chemical, civil and industrial engineering. Faculty can offer consulting expertise in international business and law, computer technology and systems

design, microbiology and biotechnology, agriculture and range management, water and resource management, environmental and toxic waste management, petroleum and geological exploration, metallurgy and mineral processing, architecture and construction technology.

Montana's universities offer distinctive programs and centers that can support business development. A sampling of these includes:

- University Technical Assistance Program;
- Bureau of Business and Economic Research;
- Mansfield Center for Pacific Rim Affairs;
- Institute for Tourism and Recreation Research;
- Center of Excellence in Biotechnology;
- Center for Interfacial Microbial Process Engineering;
- Advanced Mineral and Hazardous Waste Processing Center of Excellence
- Center of Excellence in Advanced Materials and Process Sciences;
- Advanced Technology Park;
- Big Sky Telegraph Network; and
- United States Patent Depository Library.

Access to specialized equipment and laboratories can make the critical difference for businesses developing new products and technologies. Montana's universities house facilities that can be used by the business community on a for-fee basis. Special research facilities include laboratories dedicated to research in biotechnology, forestry, engineering, laser technology, industrial technology, image analysis and computer graphics, agriculture, wildlife, and mining.

Montana's universities offer student programs such as internship programs, Small Business Institute case studies and student research programs that can provide assistance and technical services to the business community. These outreach programs are supervised by faculty members and are available free or for a minimal charge.

Serving the Business Community

The Center links business owners and entrepreneurs with the information, resources and expertise they need to make their ventures operational. To help accomplish this objective, the Center has established a comprehensive

database of resources to include programs, services, facilities, equipment and expertise found in the public sector and university community. The private sector is invited to participate in the Center's database.

Center directors meet with clients, free of charge, to help clients define and prioritize their needs. Directors then use the Center's database to link clients with the resources required. A \$25 fee is charged for all database searches.

The Center also provides resource materials to help clients prepare business, marketing and financial plans; and can direct clients to library resources and government statistics to assist them in developing these plans.

Upcoming services include establishing electronic bulletin boards and computer conferencing systems to network business owners and entrepreneurs across the state and to bring expertise to the state where experience is lacking.

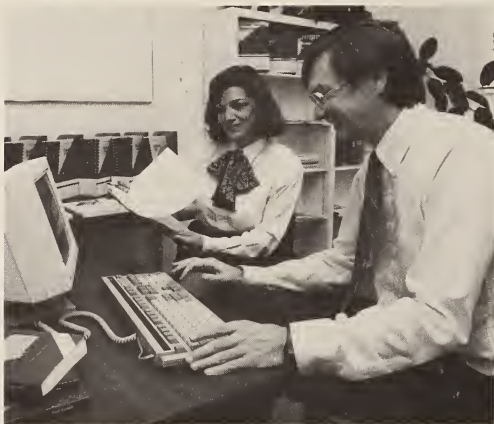
In collaboration with MSTa, the Center is planning to maintain a venture capital network to link entrepreneurs with the financial resources required for start-up, growth and expansion. Persons and organizations that can provide capital to Montana's entrepreneurs should contact the Center's central office for more details.

In addition to client services, the Center will encourage research activity both in the academic and business communities to develop new products, concepts and technologies. The Center will then work to facilitate technology transfer by matching new products and technologies with entrepreneurial skills and capital from the private sector.

A critical part of the Center's mission involves identifying ventures with the potential to impact the local or state economy, and working closely with these ventures to insure their success.

The Center's Directors and Staff

Kay Lutz-Ritzheimer, executive director for the Center, administers all Center activities statewide and works with clients at the central office in Missoula. Ann Keenan, Bozeman director, and Lori Morrin, Billings director, work with clients throughout



Kay Lutz-Ritzheimer, executive director, and Bob Campbell, database manager, conduct a database search for a Center client.

the state. Recognizing that the three campuses have unique facilities, expertise and programs, the directors at all three campuses work together to create a uniquely complementary package of services to address client needs. Also located at the central office at the University of Montana are Bob Campbell, the Center's database and computer system manager, and Kathy Frantz, the central office secretary.

Governing Board and Advisory Boards

The Center's governing board serves as an oversight board to set policies and operating guidelines and to monitor operations. Board members include:

- Dr. Larry Gianchetta, dean, School of Business Administration, University of Montana and chairman of the Center's governing board;
- Dr. James Brock, dean, College of Business, Montana State University;
- Dr. Andre Corbeau, dean, School of Business and Economics, Eastern Montana College;
- Jon Marchi, owner, Marchi Angus Ranches and member of MSTa board of directors;
- Don Hanson, manager, Customer Services for Montana, U S WEST Communications;
- Ken Thuerbach, C.E.O., Alpine Log Homes, Inc. and member of MSTa board of directors;
- Larry A. Johnson, Ph.D., president and

C.E.O., ILX Lightwave Corporation; and Jase Norsworthy, Norsworthy and Reger.

Each office has also established an advisory board to provide advice and guidance to the directors at each location. Advisory boards are composed of local business leaders, business owners, entrepreneurs, public officials and university administrators.

Looking to the Future

The Montana Entrepreneurship Center represents a proactive yet cost-effective approach to economic development, using the state's universities to deliver business and technical assistance to business owners and entrepreneurs statewide. Serving as the gateway to the Montana University System and its unique resources, the Center aims to make a critical

difference for many new and developing businesses.

"We look forward to Montana reaping the rewards of the Center's efforts to assist entrepreneurial and business development throughout the state," commented Jon Marchi, MSTa board member and member of the Center's governing board. ☐

For More Information Contact:



Central Office:

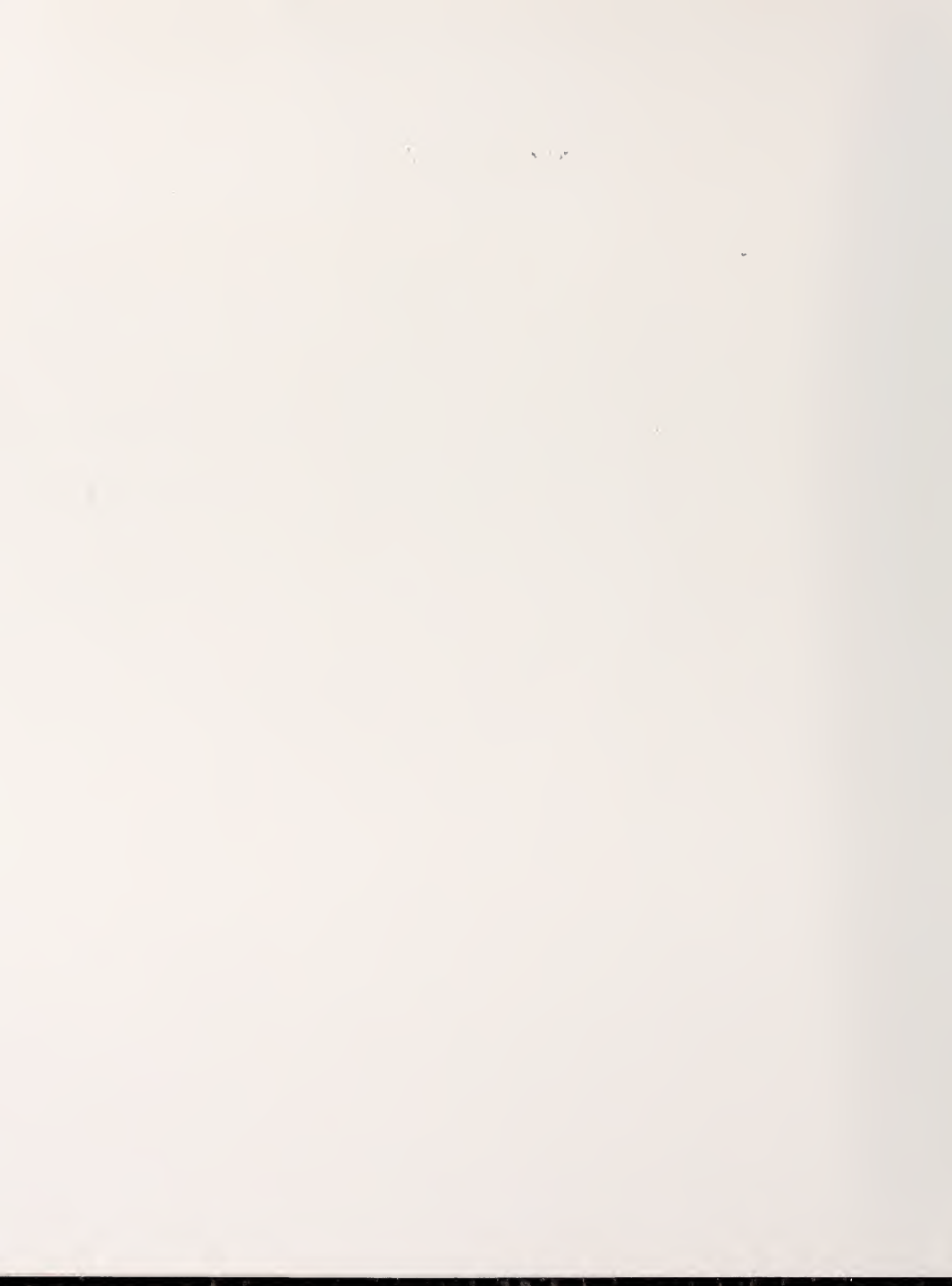
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MSTA Executive Director Appointed

On August 1, 1990, Carl E. Russell joined the MSTA as executive director. During his 18 years in the economic development field, he was responsible for directing a variety of entrepreneurial and small business development activities in Pennsylvania, Virginia and Delaware.

From 1983 to 1990, he was president and CEO of RDC Institute/RDC, Inc., a private, county-wide economic development partnership in Delaware County, Pennsylvania. Under Mr.



CARL E. RUSSELL

Russell's direction, the firm managed a seed stage venture capital fund with \$1.5 million under management. During his tenure, the fund placed investment capital in 12 portfolio companies in the greater Philadelphia area. Post investment activities involved Mr. Russell holding seats on various portfolio company boards of directors and providing value-added management assistance. The enterprise also served as the catalyst for the development and administration of a 100-acre technology park, a 50,000 square foot small business incubator, and a neighborhood commercial-industrial revitalization project.

He also served as business development director for the Virginia Peninsula Economic Development Council and business development coordinator for the city of Wilmington, Delaware, as

well as a consultant on small business development for a number of states and foreign concerns. In 1989, he served as a United Nations Fund for Science and Technology consultant on enterprise development to a consortia of education, business, and government leaders in Chile, South America.

Mr. Russell holds a bachelor of arts degree in government from Johns Hopkins University and has studied extensively at the graduate level in economic development, finance and management. In addition, he has completed the National Association of Corporate Directors training program and served a six-year term on the board of directors of the National Council for Urban Economic Development.

On the future of MSTA, Mr. Russell commented, "I am confident that MSTA will continue to be a viable tool for enhancing entrepreneurial economic development through effectively linking the private sector, university system, and public sector in Montana." □

Update on MSTA Seed Capital Financings

Lattice Materials Corporation

In September of 1990, MSTA closed on a \$140,000 investment in Lattice Materials Corporation of Bozeman. Coupled with the earlier \$210,000 investment, the total MSTA investment in Lattice is \$350,000. Earlier this year, the company was also successful in receiving a \$175,000 Community Development Block Grant from the City of Bozeman.

The company's products are silicon crystal optics for the infrared imaging and laser markets. The year-old company's product sales continue to experience significant growth. The MSTA funds, matched on a dollar-for-dollar basis, will be used by the company to enable the company to meet production requirements of recently acquired contracts.

Gateway Software Corporation

In August of 1990, MSTA reserved an additional \$125,000 to invest in Gateway Software Corporation continuing upon the company raising a like amount of equity capital from private investors. The company will use the

investment to hire additional personnel and increase its marketing efforts.

The company develops and markets software for school administration applications for use on the IBM AS/400, a mid-range computer. The company's first independently-developed product is a library management system that allows libraries in a district to "network." The company's library management software is installed on IBM AS/400 systems throughout the country with most recent installations in California and Missouri.

In order to complete product development and initiate sales of its additional school administration products for the IBM AS/400, the company plans to raise a significantly larger round of investment capital in 12 to 18 months. The MSTA expressed its intention to participate in that financing round if the company meets its business development and product sales milestones.

Basic Bio Systems, Inc.

The Missoula-based company, a recipient of an MSTA investment in August of 1989, is in the final phases of technology development and is now focusing on cosmetic and over-the-counter pharmaceutical products for its initial markets. The NURTURE system, the company's proprietary technology, utilizes oat-based protein microparticles for the controlled delivery of a variety of substances. NURTURE lends itself to incorporation in both solid and liquid

formulations and can be applied topically as powders, lotions, creams, or sprays.

The company has been successful in entering into product development agreements with a number of domestic and foreign companies for specific applications of the NURTURE system in the areas of pesticides and personal care products, food flavor concentrates, personal care products, animal health care products, and cosmetics. In addition, major oil companies have expressed interest in a joint venture to explore the novel ability of NURTURE to emulsify and disperse oil spills in the marine environment.

ChromatoChem, Inc.

Recipient of a \$350,000 MSTA investment in December of 1989, the company is developing new applications for its "affinity chromatography" technology. The company recently entered into a development/evaluation agreement with Champion International Corporation for extraction of a natural sweetener from wood chips. If successful, ChromatoChem's process would create a new value added product from the forestry industry.

During the company's separation process, certain molecules attach themselves to other molecules in order to trap the desired products. This process increases the yield for purifying biopharmaceuticals produced by genetic engineering and cell culture. □

The Montana Technology and Entrepreneurship Forum

The Montana Technology and Entrepreneurship Forum was held on June 29, 1990, at the Radisson Northern Hotel in Billings, Montana. Hosted by the Montana Science and Technology Alliance and sponsored by the Montana Private Capital Network and the Billings Chamber of Commerce, the forum was attended by over 100 participants representing venture investors from throughout the nation, Montana leaders in entrepreneurial and technological development from both business and government, representatives from public and private research organizations, and officials from federal research sponsoring agencies.

The morning venture capital session featured presentations from selected technology-based high growth companies actively seeking investment capital. A number of companies were either MSTA portfolio companies or companies under consideration for MSTA investment capital. The afternoon entrepreneurs' and technologists' village featured displays by a wide variety of technology-based companies and research organizations. Over 25 companies representing technology areas of biotechnology, advanced minerals processing, hazardous wastes remediation, advanced materials, laser technologies and computer software were represented.

Several benefits are anticipated from the forum. First, venture investors may invest in the companies featured at the morning venture capital session. Second, federal agencies gained an understanding of the state's entrepreneurial activity and research capabilities. Third, companies and research organizations made valuable contacts with federal agencies sponsoring technology research. And fourth, companies developed a valuable network of contacts to assist in ongoing entrepreneurial development in the state. It is anticipated that as a result of the forum, both venture investors and federal research agencies are more aware of the technology development capabilities available within Montana for companies and research organizations. ☐

NSF Designates an Engineering Research Center at MSU

The Center for Interfacial Microbial Process Engineering at Montana State University was designated a National Science Foundation engineering research center earlier this year. The NSF centers, partnerships between academia, industry, NSF and the states involved, are dedicated to pursuing research that improves U.S. competitiveness. MSU's center, along with two other centers, was selected from 48 proposals submitted.

"The \$7.5 million in NSF funds, added to industrial and state support, will combine for a total of \$15 to \$16 million being expended in the state through the center over the next five years," said Dr. W.G. Characklis, center director.

The center is a partnership between Montana State University and the Idaho National Engineering Laboratory. In addition, the center includes research at Johns Hopkins University, California State University, Rensselaer Polytechnic Institute, the University of Idaho, the University of Wyoming and Montana College of Mineral Science and Technology.

Currently, seventeen large corporations and industrial organizations representing petroleum production, power generation, chemical manufacture, pulp and paper, and mining are members of the center's industrial associates program. These associates include Amoco Corporation, Dow Chemical, Electric Power Research Institute, Union Car-

CENTER FOR INTERFACIAL MICROBIAL PROCESS ENGINEERING

bide, Montana Power Company, Weyerhaeuser Paper Company, DuPont, and Betz Industrial, among others. This ongoing collaboration has

resulted in research which these industries view as vital to improving their competitiveness.

At the center, researchers investigate ways that microscopic organisms such as bacteria can be either a boon or bane to the efficiency of various industrial processes. Experts in microbiology, chemistry, chemical engineering and industrial processes probe the fundamental ways in which microbes grow on equipment surfaces and at the interfaces between gas, liquid and solid phases. The organisms and the products of the chemical reactions they carry out can contaminate, gum up or cause corrosion in operations such as oil refining, heating and cooling systems, fermentation, food processing, and microelectronics. The researchers also investigate microbial phenomena that can benefit industry. For example, bacteria are being studied for their potential to break down hazardous substances in contaminated soil and water and are increasingly being used to extract valuable minerals from low grade ores and mining wastes.

"This NSF designation greatly enhances Montana's research capabilities. Through the MSTA centers of excellence program, the Alliance will continue to be a strong support of future development of the engineering research center at Montana State University," stated Carl Russell, MSTA executive director. ☐

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